

Sun Valley

Bus Stop Amenities Project



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Cover Photo from:

Griego, Tina. Isolated Denver neighborhood is blocked out, blocked in. The Denver Post, 4, Dec. 2010.

Project Introduction

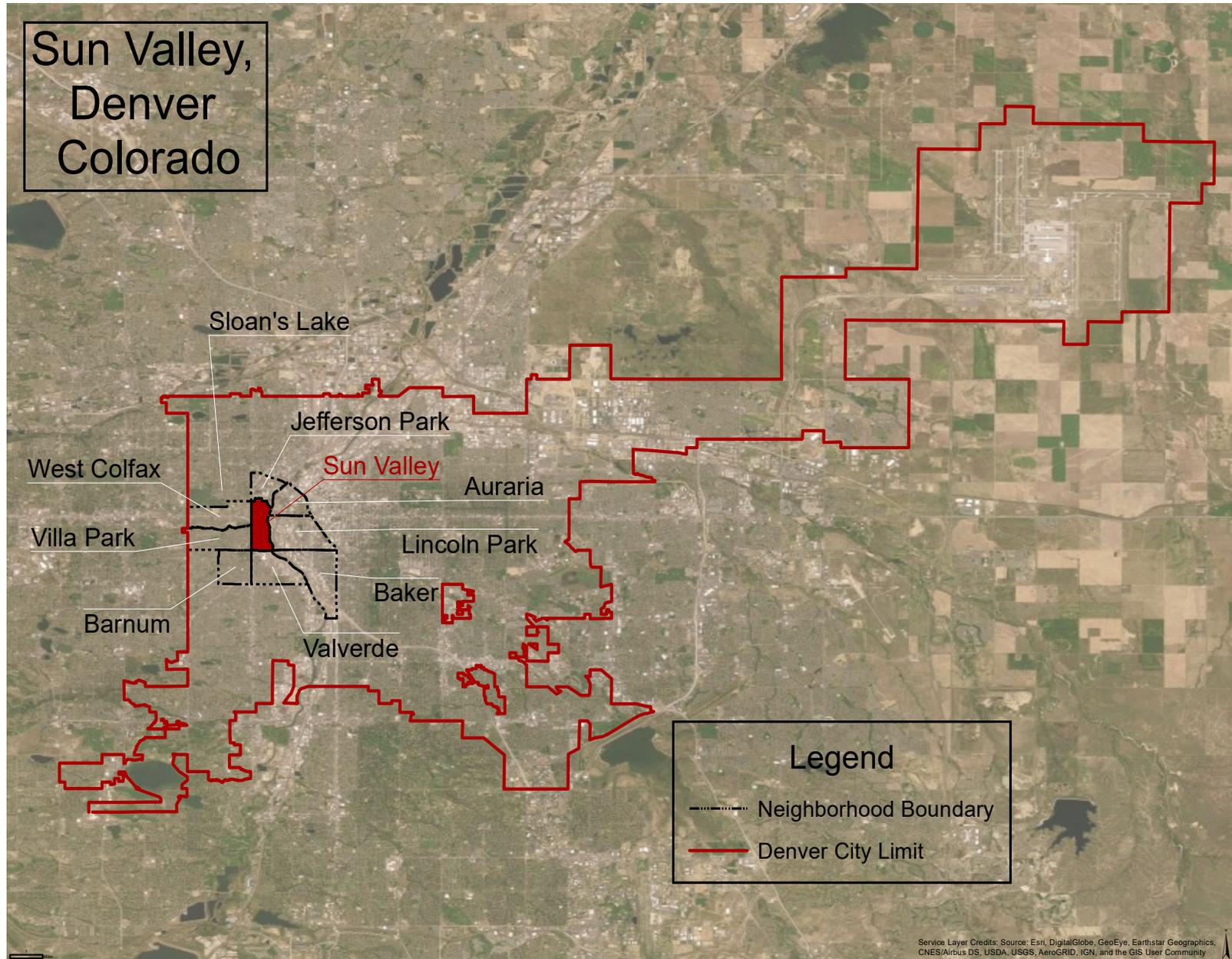
The purpose of this project is to inventory the state and amenities of the Federal Boulevard bus stops located in the Sun Valley neighborhood and to make recommendations regarding built infrastructure improvements that would better serve the needs of the Sun Valley community. This project is part of the City and County of Denver's (CCD) implementation of the recently adopted *Denver Moves: Transit* plan. In 2019, CCD launched the Bus Stop Inventory project, which seeks to inventory the features, amenities, and conditions of all bus stops in the city; currently no such database exists. Partners on *Denver Moves: Transit* project include Denver Public Works, Denver Public Health and Environment, and Felsburg Holt & Ullevig as well as Walk Denver, the city's leading pedestrian advocacy group. The data collection, analysis, and recommendations of this plan were provided by students in the Planning Methods class at the University of Colorado Denver's Master of Urban and Regional Planning program. The contributing students are Aidan Johan, Megan Miles, Sean Rusnak, and Geoffrey Weathers.

The Sun Valley neighborhood consists of a single census tract bound by West 19th Avenue to the north, Federal Boulevard to the west, West 6th Avenue to the south, and the South Platte River to the east as shown in Exhibit 2 below. The neighborhood features a diverse mix of uses, including Denver's Empower Field at Mile High Stadium, the headquarters of the Colorado Department of Transportation (CDOT), the 8th Avenue industrial area, and Sun Valley Homes, a public housing site operated by Denver Housing Authority. Although centrally located, approximately two miles from Lower Downtown, Sun Valley remains largely isolated from the greater city due to its built and natural features that can prevent its residents from engaging in the broader Denver community. Access to public transit is crucial to the Sun Valley community due to the socioeconomic and geographic conditions of the neighborhood. In addition to Sun Valley Homes and Decatur Place, an affordable housing complex operated by Mercy Housing, the neighborhood is home to Denver Human Services' main office and Denver Health's popular Westside Clinic, both of which cater to a primarily low-income population.

While Sun Valley remains one of Denver's most economically challenged neighborhoods, it is currently undergoing a period of unprecedented growth and transformation related to the revitalization of the South Platte Greenway, the addition of the Decatur-Federal light rail station, and several pending redevelopment projects. The 2013 Decatur-Federal Station Area Plan set the stage for future growth in the neighborhood and established a vision of Sun Valley that is "celebrated, connected, innovative, and healthy" (Decatur-Federal Plan 5). The Stadium District Master Plan, approved in June 2019, aims to replace the surface parking lots on the southern end of Mile High Stadium with a new mixed-use neighborhood destination incorporating retail, restaurant and office space. Meow Wolf, an arts collective based in Santa Fe, NM, chose the neighborhood for its second exhibition space, a 90,000 square foot building that will host a permanent immersive art installation estimated to draw 1.5 million visitors per year (Jackson, "Sun Valley Could be Denver's Next Big Thing"). At the same time, Denver Housing Authority is embarking upon an ambitious neighborhood redevelopment plan that will quadruple the density of the neighborhood through the addition of affordable and market rate housing while transforming the existing street grid and adding amenities such as a Youth and Family Hub, a regional park, and an International Market. Any recommendations for improvements to bus stops must anticipate the changing character of the neighborhood as well as meet current needs.

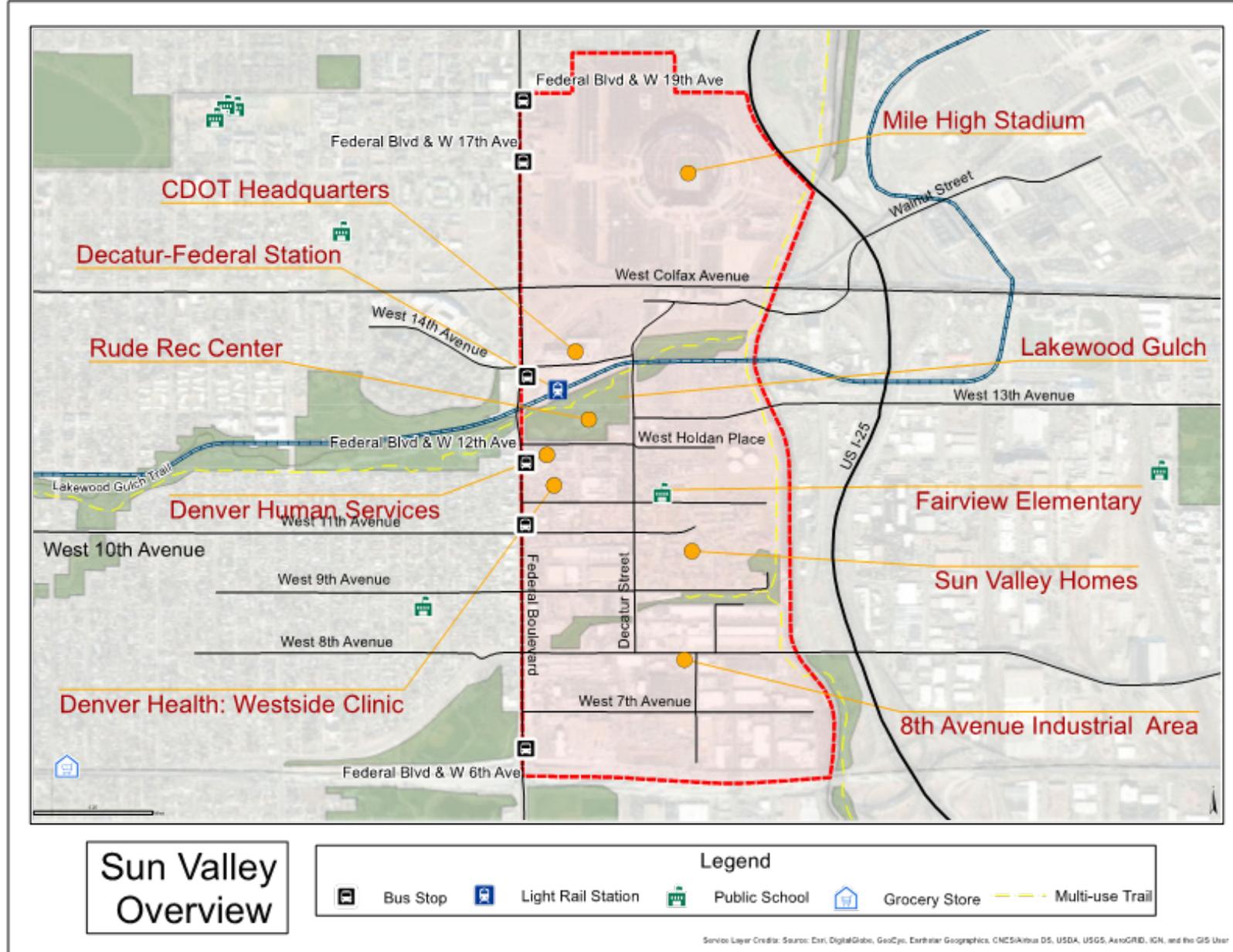
Chapter One: Project Introduction and Context

Exhibit 1: Map of Sun Valley in Relation to Other Denver Neighborhoods



Chapter One: Project Introduction and Context

Exhibit 2: Map of Sun Valley with Detail



Data for this project was collected through a combination of research and fieldwork. First, team members conducted general research, including census data analysis, to provide an overview of the neighborhood's general features and to contextualize their importance within the transportation ecosystem of the Sun Valley community. Detailed summaries of the demographics, land-use patterns, mobility, and urban fabric of Sun Valley are included in the remainder of **Chapter One**.

Next, team members conducted field investigations to collect data on each bus stop's amenities, quality, and physical surroundings. Data collection methods included a preliminary windshield survey, site visits, and intercept interviews with transit users. Stop-level data, including information about amenities present, the presence of public art, walkability, cleanliness, accessibility, connectivity, and safety, was inputted into a customized website so that it could be subsequently integrated into the larger bus stop amenity inventory project. All data collectors were trained to use this tool together; usage was tested and compared to establish interobserver agreement, ensuring that the scoring of bus stops and amenities was uniform. In addition to an amenity inventory and quality assessment, intercept interviews were conducted to gain a community perspective regarding the state and needs of existing bus stops and to provide additional information about how Sun Valley residents use transit and what improvements they would like to see at the stops within their neighborhood. The team sought to interview a diverse cross-section of Sun Valley residents to obtain a general understanding of differing community perspectives. The results of the site assessments will be presented in **Chapter Two**.

Chapter Three details findings and recommendations, including identification of the main bus stop and pedestrian gaps in infrastructure and experience. Recommendations are made based upon the synthesis and analysis of the neighborhood's demographics, land use, transportation, urban fabric, site analysis, and intercept interviews. The recommendations include both macro and micro suggestions placed specifically within the context of the Sun Valley neighborhood.

DEMOGRAPHIC PROFILE

Sun Valley is one of Denver’s most demographically unique neighborhoods, resulting in distinctive transportation challenges and opportunities. Currently, 92% of the neighborhood’s residents are renters, primarily living in federally subsidized housing provided by Denver Housing Authority (275 units) or Mercy Housing (106 units) shown in Table 1 below. The physical isolation of the neighborhood is exacerbated by the low socioeconomic status of many of its residents; these factors suggest the important role that public transit may play in the neighborhood. The median income for Sun Valley was \$9,578 in 2017, just 16% of the median income for Denver County as a whole (\$60,098), making Sun Valley the poorest census tract in Colorado (U.S. Census Bureau, Table B19013). The low annual income for households in Sun Valley increases the likelihood that many residents do not own a reliable personal vehicle. The Bureau of Transportation Statistics estimates that the average cost of owning a personal vehicle (assuming 15,000 miles driven) per year is \$8,849, \$5,960 of which is attributed to fixed costs. In this estimate, fixed costs alone would account for 62% of the median income of a Sun Valley resident. As seen in Table 2 and visualized in Exhibit 4 on the following page, 45% of renter-occupied units in Sun Valley do not have access to a vehicle, compared to 17% in Denver County (U.S. Census Bureau, Table B25044). Furthermore, access to a vehicle does not necessarily mean *reliable* access to a *reliable* vehicle. Access may mean reliance on a friend or family member’s vehicle, which may not always be available. The inability of many Sun Valley residents to afford and maintain a personal vehicle indicates that the neighborhood is likely composed of dependent riders, accentuating the importance of having good access to transit through adequate bus stops.

Exhibit 3: Occupancy of Households by Owner

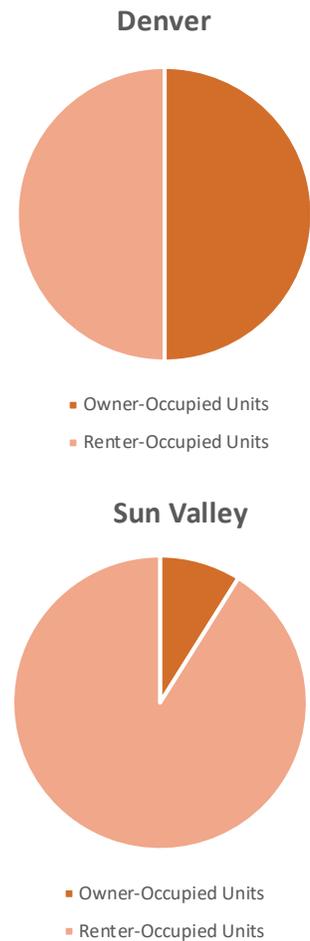


Table 1: Occupancy of Households by Owner or Renter

Occupancy of Households by Owner

Type of Household	Denver		Sun Valley	
	Count	Percent	Count	Percent
Owner-Occupied Units	143,874	50%	39	9%
Renter-Occupied Units	143,388	50%	420	92%
Total Units	287,262	100%	459	100%

Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (Table B25003)

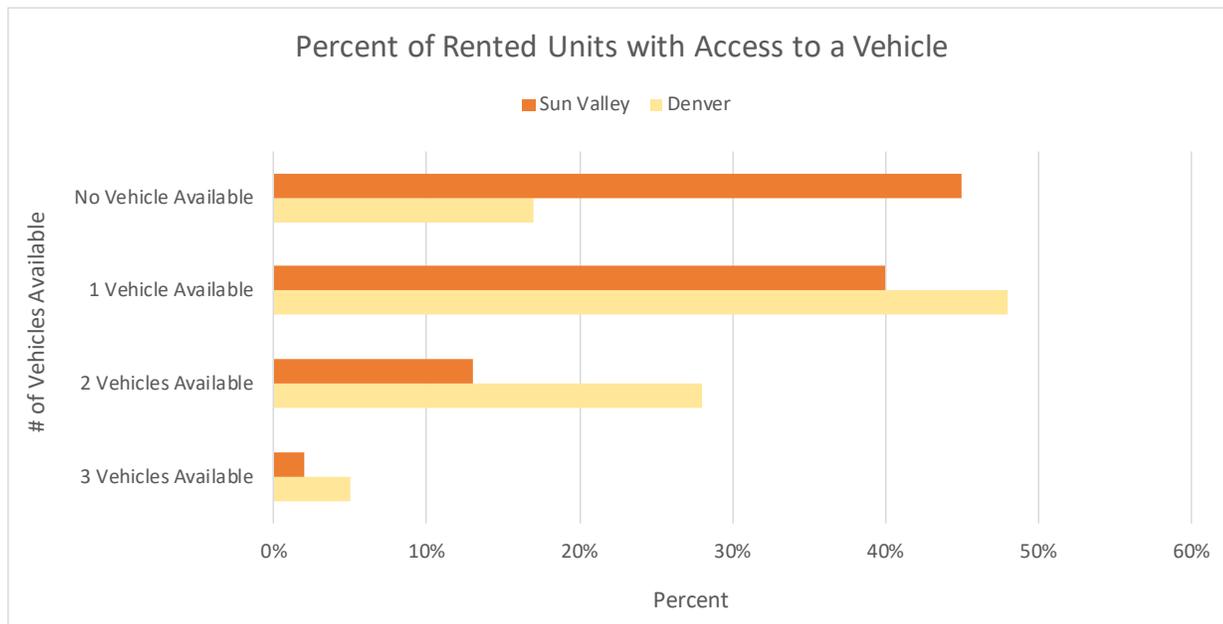
Table 2: Number of Rented Units with Access to a Vehicle

Number of Rented Units with Access to a Vehicle

Number of Vehicles Available	Denver		Sun Valley	
	Count	Percent	Count	Percent
No Vehicle Available	24,946	17%	187	45%
1 Vehicle Available	68,503	48%	168	40%
2 Vehicles Available	40,060	28%	55	13%
3 Vehicles Available	7,664	5%	10	2%
4 or More Vehicles Available	2,215	2%	0	0%
Total	143,388	100%	420	100%

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (Table B25044)

Exhibit 4: Percent of Rented Units with Access to a Vehicle



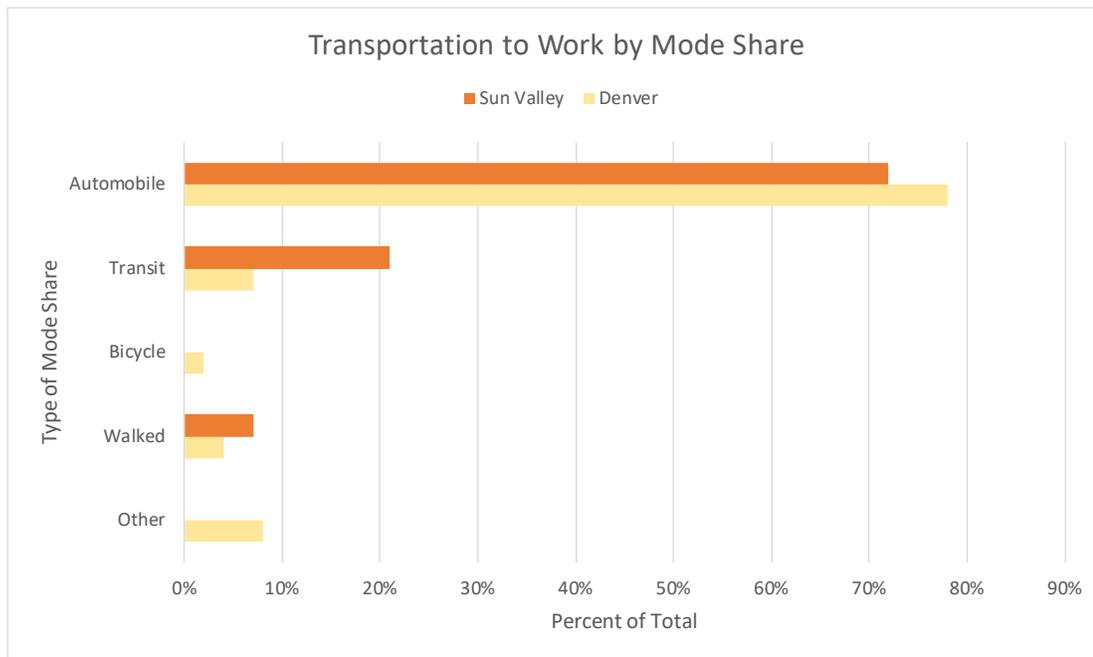
Reliable transportation is a key factor in maintaining gainful employment. Only 17% of Sun Valley adults are fully employed, compared to 59% of adults in Denver County (U.S. Census Bureau, Table B23027). Of employed Sun Valley residents, 21% depend on public transit to get to work, whereas only 7% of all commuters in Denver County take transit. Thirty-two percent of Sun Valley Homes residents identified public transportation as their primary form of transportation, and 11% identified transportation as a barrier to employment (Denver Housing Authority, “Sun Valley Initial Needs Assessment”). Transit is clearly an important economic resource for Sun Valley residents, and in addition to commuting, residents are likely using transit for other key tasks. This is particularly likely for grocery shopping, as Sun Valley is a food desert, with the nearest grocery store approximately two miles away.

Table 3: Transportation to Work by Mode Share

Mode	Denver		Sun Valley	
	Count	Percent	Count	Percent
Automobile	287,093	78%	137	72%
Transit	24,960	7%	39	21%
Taxicab	597	<1%	0	0%
Bicycle	8,081	2%	0	0%
Walked	16,133	4%	13	7%
Other	30,556	8%	0	0%
Total	367,420	99%	189	100%

Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (Table B08301)

Exhibit 5: Transportation to Work by Mode Share



In addition to the economic factors that limit mobility, Sun Valley also has one of the highest proportions of youth residents in any Denver neighborhood. Children under the age of 16 account for 49% of the neighborhood’s population. In Denver County, youth in the same age range only account for 18% of the total population (Table 4). Sun Valley is home to a single elementary school, Fairview Elementary; as of 2018, only 53% of elementary-aged students in Sun Valley Homes elected to attend this neighborhood school, with the rest preferring schools in different neighborhoods (Denver Housing Authority, “Sun Valley Initial Needs Assessment”). While Fairview Elementary School is in walking distance of the vast majority of residents, it does not feed into a single middle or high school system, meaning that all youth must travel outside of the neighborhood after graduating from elementary school; improved transit and pedestrian infrastructure would make it safer for Sun Valley youth to get to school.

Table 4: Population by Age

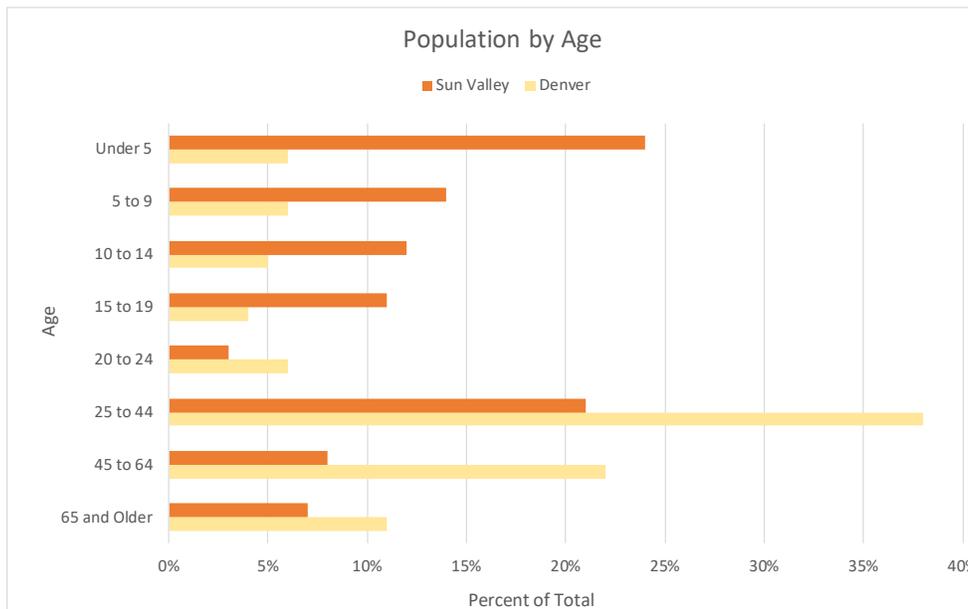
Population by Age

Age	Denver		Sun Valley	
	Count	Percent	Count	Percent
Under 5	43,686	6%	340	24%
5 to 9	40,896	6%	197	14%
10 to 14	35,508	5%	174	12%
15 to 19	27,051	4%	164	11%
20 to 24	43,009	6%	46	3%
25 to 44	258,109	38%	297	21%
45 to 64	149,060	22%	117	8%
65 and Older	75,959	11%	106	7%
Total	678,467	100%	1,441	100%

49% of residents in Sun Valley are under the driving age, compared to 17% of Denver Country residents

Source: US Census Bureau, 2012-2017 American Community Survey 5-Year Estimates

Exhibit 6: Population by Age



Source: US Census Bureau, 2012-2017 American Community Survey 5-Year Estimates

Sun Valley is also home to a large population of immigrant and refugee families. In a 2018 Denver Housing Authority survey of Sun Valley Homes residents, 45% of respondents identified as a 1st generation immigrant or refugee, and only 40% of respondents reported being a native English speaker (Denver Housing Authority, “Sun Valley Initial Needs Assessment”). The same survey identified over 30 languages being spoken in the neighborhood; in addition to English, the most prominent of these are Somali, Spanish, Vietnamese, and Arabic. Household composition ranges from elderly and/or disabled residents living alone to large multigenerational families consisting of up to 13 members. Any improvements to transit infrastructure should take into account potential language barriers, accessibility (including to and from the neighborhood), as well as usage by youth travelling alone, large families, and single-parent families with young children.

ADDITIONAL CONTEXT

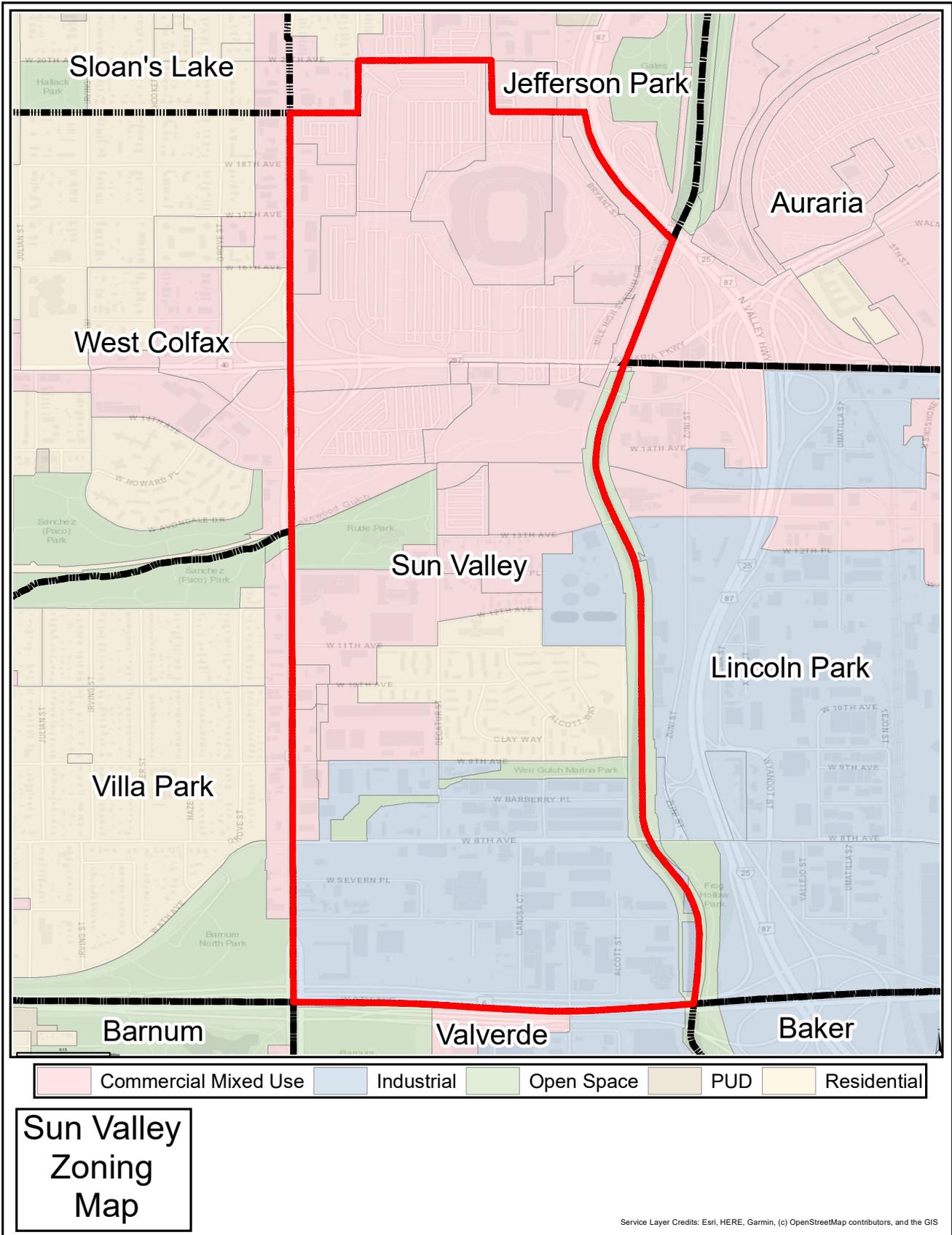
Land Use

Sun Valley can be roughly divided into three distinct sections. The northernmost section, referred to as the Stadium District, covers the area around Mile High Stadium, extending southward to Lakewood Gulch. The middle section, roughly bound by Lakewood Gulch to the north and West 9th Avenue to the south, contains the neighborhood's residential uses as well as some community organizations and social services. The southernmost section, extending from West 9th Avenue to the north and 6th Avenue to the south, consists primarily of light industrial construction and manufacturing.

Of the three sections, only a small portion is zoned for residential use. There are approximately 460 occupied units in the neighborhood, primarily in the form of multi-family residential homes, housing 1,441 residents (U.S. Census Bureau, Tables B01001 & B25024). Other uses located adjacent to the residential developments including a daycare, Fairview Elementary School, Denver Human Services, the Denver Health Westside Clinic, the Sun Valley Youth Center, the Sun Valley Kitchen (a community-based restaurant and food bank), and the Sun Valley People Hub and Opportunity Center (community and office spaces run by Denver Housing Authority). Therefore, while being isolated from the greater Denver community, there is a concentration of social services that benefit many Sun Valley residents. However, the neighborhood still lacks high quality public spaces, cultural centers, and space where people can come together for community events and celebrations.

While most of Sun Valley is composed of industrial land uses, much of the neighborhood has been rezoned to account for redevelopment, changing land uses in the future. More than half of the land in Sun Valley is zoned for commercial mixed-use, primarily to correspond with the future redevelopment of the Stadium District. The commercial mixed-use designation aligns with the redevelopment plans set forth in the Stadium District plan, including the future inclusion of mixed-income housing, retail spaces, and a more pedestrian friendly environment (Stadium District Plan 8). In the process of planning for Sun Valley's redevelopment, the City and DHA created redevelopment zones, starting on the north with the Stadium Entertainment District, which will boast restaurants, retail outlets, a hotel, and commercial office buildings. This zone also includes the new headquarters for the Colorado Department of Transportation, the Decatur-Federal light rail station, and the Sun Valley Eco District Community Design Center. The central zone will focus on Transit Oriented Development (TOD) mixed-income residential development by both DHA and private developers, ground floor commercial spaces, open space, parks, sports fields, Fairview Elementary School and childcare facilities. The southernmost zone would be home to light industrial businesses and is the focus of City business development and job creation efforts (Sun Valley EcoDistrict 36).

Exhibit 7: Sun Valley Land Use Map



Transportation

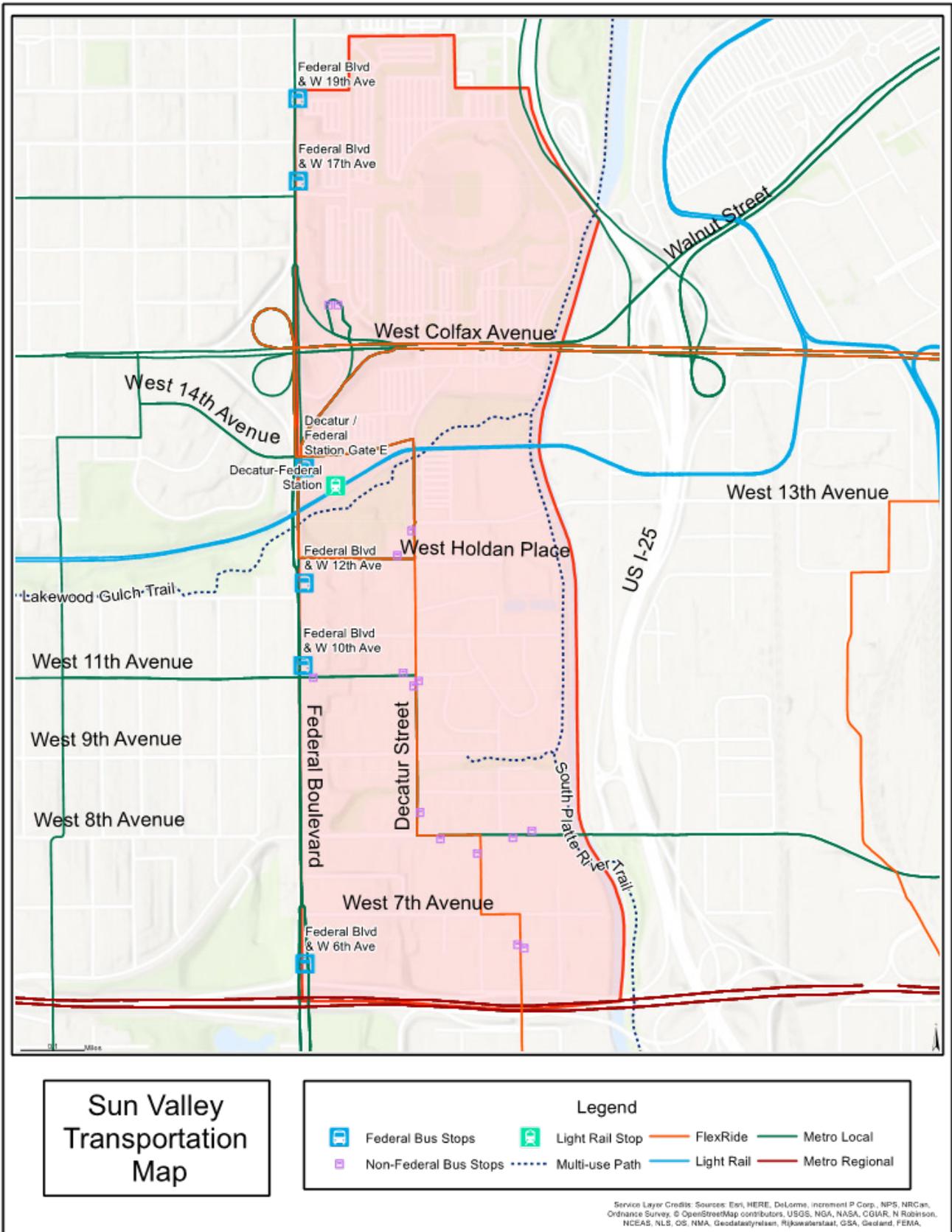
Sun Valley's location next to the Colfax Viaduct, I-25, and the South Platte River paradoxically leaves it isolated from adjacent neighborhoods and limits points of ingress and egress from all directions. For drivers coming from the east, entrance to the neighborhood is possible via West 6th Avenue, West 8th Avenue, and West 13th Avenue, all westbound one-way roads. The main points of entrance from the west include West 10th Avenue and W. Holden Place. The street grid is inconsistent and difficult to navigate; there are several examples of roads that end due to geographic or other barriers as well as misaligned intersections. While West 8th Avenue is the only road that bisects the neighborhood from east/west, there is no road that runs the entire length of the neighborhood. Decatur Street is the primary north/south corridor; it comes to an end at West 8th Avenue.

While Sun Valley is located along the South Platte River and Lakewood Gulch trails, popular pedestrian and bike routes, there is little infrastructure for either mobility group within the neighborhood itself. West 13th Avenue, while theoretically a bike lane, needs serious infrastructure improvements in order to safely accommodate bikers. There are no bike lanes that would allow someone to safely traverse the neighborhood. Sidewalks are narrow, in generally poor condition, and occasionally disappear, particularly near the industrial southern boundary. However, efforts to improve the South Platte Greenway, including enhancements to the Weir Gulch and Lakewood Gulch trails, could increase connectivity to the rest of the city for bikers and pedestrians (Decatur-Federal Area Plan 6). The lack of pedestrian and bicycle infrastructure currently limits the ability of residents to safely access transit, particularly on highly trafficked roads like Federal Boulevard, where the neighborhood has four bus stops.

In addition to the Federal Boulevard bus stops that will be assessed in this report, there are approximately 14 additional bus stops in the neighborhood, as well as the Decatur-Federal Light Rail Station. These stops service the PLFX, 1, 9, 16, and 15L routes. The light rail station serves as a hub for several additional routes, including the 36L, 30L, 30, 31, 103 and the W line. The Federal Boulevard bus stops serve the 30, 30L, 31, and 36L routes.

The Decatur-Federal Light Rail Station was completed in 2013 and now provides connection to the entire metro Denver area. However, while connecting residents to Denver metro area, the rail station is underutilized by neighborhood residents, with 0 residents reporting that they use the service to commute to work (U.S. Census Bureau, Table 80301). While some transit services are available in SunValley, the existing street grid and lack of connectivity, especially east/west, are barriers that inhibit mobility and discourage visits from outsiders. Ultimately, Sun Valley has a two-tiered transportation challenge: it is isolated from the rest of Denver due to its natural and built environment, and this problem is exacerbated by conditions within the neighborhood that may prevent residents from accessing transit services that could reliably connect them to the entire Denver metro area.

Exhibit 8: Sun Valley Transportation Map



Urban Fabric

In comparison to adjacent neighborhoods, Sun Valley is significantly less dense; it is characterized by large lot sizes, surface parking, empty lots, and blocky industrial warehouses. The area around Empower Field at Mile High Stadium, which occupies the northern third of the neighborhood, is primarily comprised of surface parking organized into large blocks with limited connections to adjacent streets and neighborhoods. The space underneath the Colfax Viaduct and along Old West Colfax Avenue remains largely unused and inactive, although there are a few historic buildings containing active uses, most notably a series of pastel houses that are being developed into a Latin American arts museum.

Sun Valley Homes stands in the middle of the community. Originally built in the 1950s, the 33-acre public housing project is one of Denver Housing Authority's oldest and most distressed properties. The two-story red brick rowhomes sit on large lots with open front and back yards, with clotheslines and small playgrounds dispersed throughout the community. Sun Valley Homes is currently undergoing large-scale redevelopment, with construction already underway at the West 10th Avenue and Decatur Street intersection. New construction will range from six to eight story apartment buildings, providing extra density and transforming the character of the neighborhood. The massive scale of the project will also result in significant construction zones that provide additional barriers to resident mobility. DHA has created healthy living guidelines in their design of new housing, which include addressing air quality and heat island impacts, planning natural spaces for reflection, implementing traffic calming measures, planning for bike sharing and bike transit, incorporating culturally based public art, and incorporating community gardens, community space, and play/outdoor spaces on each building site (Mithun 2-6). There is already some public art in the neighborhood, notably including painted dumpsters in Sun Valley Homes and murals on Fairview Elementary, the Sun Valley Opportunity Center, the Sun Valley Youth Center, and at Namaste Solar. There are also two community gardens, one located across from Fairview Elementary and the other adjacent to the South Platte River Trail and the Sun Valley Opportunity Center.

Exhibit 8: Sun Valley Homes



Exhibit 9: New construction at 10th & Decatur



Exhibit 10: Rendering of the Sun Valley Master Plan with Project Descriptions



Source: Denver Housing Authority/Sun Valley EcoDistrict

There is little activation along the sidewalks in the area and much of the land is covered with surface parking or empty lots, including large lots connected to Denver Human Services, the Westside Clinic, Fairview Elementary, and across from the Sun Valley People Hub. The buildings in the area are primarily modern, large and blocky with brick and concrete exteriors. Empty lots along West 13th Avenue on the eastern edge of the neighborhood currently house decommissioned Excel energy infrastructure; these will also be redeveloped into housing as part of Denver Housing

Exhibit 11: Part of the Platte River Trail running through Sun Valley



Exhibit 12: A view of the decommissioned Excel energy plant along 13th Avenue



Authority's Master Plan. In general, landscaping in the neighborhood is nonexistent or poorly maintained.

There is some green space in Sun Valley. The area around Rude Recreation Center has been developed into Rude Park, which includes a baseball field. Rude Park backs up to Lakewood Gulch Trail, which runs diagonally through the neighborhood, extending to the Decatur-Federal Station to the north. The Lakewood Gulch Trail connects to the South Platte River Trail, a brick and concrete pedestrian and bike trail which runs north-south along the eastern border of the neighborhood. While this green space increases the connectivity of the neighborhood, it is not always well-maintained, particularly the area underneath West Colfax Avenue. Better landscaping and maintenance could help the area feel safer and contribute to better activation.

CONCLUSION

Sun Valley's existing land use, transportation, and urban fabric underscore the importance of transit in connecting the neighborhood to opportunities across the greater Denver metro area. The pending redevelopment of the neighborhood and high proportion of residents living in public housing offer opportunities for transit use to continue to grow in the community, particularly with the construction of dense mixed-income housing and mixed-use commercial developments occurring the near future. Sun Valley has the potential to be one of Denver's best examples of a transit-oriented development (TOD) in the future if RTD's service grows with the neighborhood.

INITIAL SITE VISIT AND WINDSHIELD SURVEY

In order to gauge the conditions of the neighborhood and to gather initial data about the bus stops under study, the project team conducted a windshield survey of Sun Valley before beginning official site assessments. The survey took place on a Wednesday afternoon in mid-October. The project team observed a neighborhood undergoing rapid change. On the intersection of West 10th Avenue and Decatur Street, the site of the first phase of Sun Valley Homes' redevelopment project, residents of aging brick row houses looked on as construction workers stopped traffic to make way for a fleet of bulldozers. The narrow, overgrown sidewalks seem incongruent with the impending development, remnants of Sun Valley's underfunded infrastructure that contribute to its sense of isolation in the wake of a potentially bright new future.

For now, mobility in Sun Valley is restricted by suboptimal infrastructure and the introduction of large-scale construction projects, including the West 10th and Decatur site as well as the ongoing Federal Boulevard expansion. Decatur Street, the neighborhood's main thoroughfare, was plagued with closures and alternating lanes of one-way traffic. The lack of clear signaling and movement of heavy machinery made this stretch of Decatur a hazard for pedestrians, which is particularly concerning due to its proximity to Fairview Elementary School. The construction in Sun Valley will only increase over the next few years of redevelopment, resulting in traffic and mobility issues for a considerable period of time.

Exhibit 1: An example of ongoing construction along Federal Boulevard



Federal Boulevard presented similar mobility challenges. The stretch of Federal Boulevard that borders the Sun Valley neighborhood is at the locus of the expansion construction, obstructing traffic, tearing up pedestrian infrastructure, and disrupting connectivity. Many crosswalks lead only into construction, requiring pedestrians who need to cross Federal Boulevard to walk a significant distance. The construction on Federal Boulevard also poses a challenge for public transit as the congestion likely negatively impacts on-time performance, which could discourage people from choosing to ride transit. While this construction will ultimately lead to major improvements, including wider sidewalks and reduced traffic, its current state creates problems for both pedestrians and transit, further isolating a siloed community in Sun Valley.

BUS STOP ASSESSMENTS

Introduction and Methodology

The project team conducted assessments of the RTD bus stops along Federal Boulevard in Sun Valley on a single Friday afternoon in mid-October. Federal Boulevard is part of Highway 287 and constitutes the western boundary of Sun Valley between West 6th Avenue and West 19th Avenue; the bus stops assessed in this study exclusively serve northbound riders. Working as a unit as well as in groups of two or three, the team walked along Federal Boulevard, investigating six total stops located at the cross- streets of West 6th Avenue, West 10th Avenue, West Holden Place Decatur-Federal Station (at West Howard Place) , West 17th Avenue, and West 19th Avenue. The purpose of the assessments was to establish and record the conditions and amenities present at each bus stop in order to assist the City and County of Denver and WalkDenver with making determinations regarding potential improvements.

The team used a combination of a WalkDenver digital survey, photography, and handwritten notes to capture conditions at each stop. The WalkDenver survey consisted of 14 questions regarding the conditions and amenities present at each stop. Six of the questions asked the team to rate the stops on a scale of 1 to 5 stars; the categories assessed in these questions were Overall, Safety, Physical Condition, Cleanliness, Disabled Accessibility, and Pedestrian Connectivity. The team conferred as to the meaning of the rankings and decided that no stop lacking basic amenities such as shelter, benches, or trash cans could receive an overall ranking of better than two stars and none that lacked a physical barrier or significant setback between riders and traffic on Federal could receive better than three. However, the team resolved that only a stop with no concrete pad or adjacent sidewalks would receive a single star. When assessing a stop's relative safety, the team took into account separation from traffic hazards as well as factors protective against assault, such as isolation and lighting. Any stops with litter or in ill-repair received low Physical Condition and Cleanliness ratings, and Accessibility and Connectivity were evaluated in terms of the state and geometry of sidewalks and the presence of crosswalks and ramps at nearby intersections. Other questions regarding bus stop conditions asked for elaboration on safety concerns, the distance to the nearest crosswalk, and the surface of the platform.

The survey asked about 11 types of amenities at the bus stops, including the presence of a bench, trash can, standard shelter, enhanced shelter, lighting, shade trees, system map, route information/schedule, area map or wayfinding, public art, and other. Although most of these are self-explanatory, the team could not find a definition or clarification differentiating standard and enhanced shelters. Since the shelters in the study area were of similar quality, they were recorded as standard shelters. In addition to the information documented in the WalkDenver Survey, the team took photographs and notes on the conditions and amenities found at each bus stop in order to provide supplemental information. The next section lays out the team's findings for each stop, starting with 6th Avenue in the south and ending with 19th Avenue in the north.

Bus Stop Assessment Results

Stop #13750: West 6th Avenue and Federal Boulevard

The Sun Valley team gave the West 6th Avenue and Federal bus stop, pictured below, an Overall rating of two stars. Although the stop was on a concrete pad and had sidewalks to the north and south, it lacked any of the 11 amenities listed in the WalkDenver survey. North-bound pedestrians were required to walk two blocks in order to use the nearest crosswalk, and the sidewalk was narrow and uneven with many commercial curb cuts, making it a difficult and dangerous passage for the disabled and pedestrians. To the

south, accessibility and connectivity were somewhat better, though the sidewalk became narrow across Highway 6 and the nearest crosswalks may be too far away for some people to cross comfortably. Furthermore, the stop was isolated, strewn with trash, and provided no protection from motorists on a multi-lane, high-speed road. The team determined that there was significant room for improvement at this stop.

Exhibit 2: Federal Boulevard at West 6th Avenue - #13750



Stop #13698: West 10th Avenue and Federal Boulevard

The Sun Valley study team found that the bus stop at West 10th Avenue deserved a two-star rating. With a nice, wide waiting pad, the stop had some potential but lacked amenities other than a trash can (probably provided by the gas station to the east) and had significant accessibility and connectivity challenges. As the Exhibit 3 above shows, the sidewalk to the south abruptly ends in an uneven, narrow dirt patch just before the intersection. Immediately to the north was a wide, heavily trafficked entrance to a gas station that made getting to, and standing at, the bus stop feel dangerous. Addressing these issues would help this bus stop feel safer and more comfortable.

Exhibit 3: Federal Boulevard at 10th Avenue - #13698



Stop #13700: West Holden Place and Federal Boulevard

The bus stop at West Holden Place, shown above in Exhibit 4, was a challenge to score because the amenities present, which included a bench, shelter, and trash can, were inaccessibly enclosed behind a chain-link fence. Although this situation may be only temporary (perhaps due to the road construction on Federal), the receptionist at Denver Human Services told the team that the fence had been up for about 5 months. Given the duration of the amenities being out of reach, the team decided to treat the stop as though it lacked any amenities and awarded it only two stars. A narrow sidewalk in front of the fence left little room for passage or waiting and the heavy traffic on Federal was dangerously close. In spite of being located so close to Denver Health and Human Services, there was no lighting at the stop. In the picture above, one can see that the stop did have a public art installation that featured ceramic tiles hand-painted by school children. Due to the fence and amount of litter in the area, the installation did little to increase the comfort of the stop. The team determined that this stop will also need some improvement to make it safe and comfortable.

Exhibit 4: Federal Boulevard at West Holden Place - #13700



Stop #13703: Decatur Federal Station at West Howard Place and Federal Boulevard

The Sun Valley study team gave the Decatur-Federal Station bus stop, shown above in Exhibit 5, a three-star rating. The stop included several basic amenities, such as a shelter, bench, trash can, and public art. The accessibility and connectivity of the stop was good, with wide, well-maintained adjacent sidewalks and crosswalks leading in all directions across nearby intersections. The shelter's distance from the curb also offered a modicum of safety and comfort from passing motorists.

Exhibit 5: Decatur-Federal Station at Federal Boulevard and West Howard Place - #13703



Perhaps it is no coincidence that Decatur also seemed to be the most frequented stop in the study area (it also serves as a common transfer point). In fact, the popularity of the stop meant that the amenities it did have were inadequate for the number of people that needed them. Upwards of 15 people at a time were waiting at the Decatur Station stop with only one small shelter with benches that seat four to accommodate them. The team determined that this is a good bus stop that could be further improved by adding more amenities and lighting.

Stop #13704: West 17th Avenue and Federal Boulevard

The project team gave the West 17th Avenue bus stop, pictured above, a three-star overall rating. The stop was clean, accessible, and provided good connectivity. It also had several basic amenities, such as a shelter, bench, and trash can. The area felt safe and the shelter was set back from the curb far enough to provide some protection from traffic. Nevertheless, lighting, wayfinding and bus information, as well as public art would improve the feeling of security and comfort at this stop.

Exhibit 6: Federal Boulevard at West 17th Avenue - #13704



Stop #22773: West 19th Avenue and Federal Boulevard

The Sun Valley team gave the West 19th Avenue bus stop, pictured below, a three-star rating. This stop included basic amenities, such as a shelter, bench, and trash can. It was also clean, in decent state of repair, and was a fairly safe distance from the road. Although public art and lighting were absent, the major downfall of this stop was its lack of connectivity. The intersections at West 18th and West 19th Avenues have no marked crosswalks. The nearest marked crosswalks were almost two blocks away, potentially influencing pedestrians into dangerous crossing situations. The team determined that white paint and crosswalk infrastructure were the most pressing needs for this stop.

Exhibit 8: Federal Boulevard at West 19th Avenue - #22773

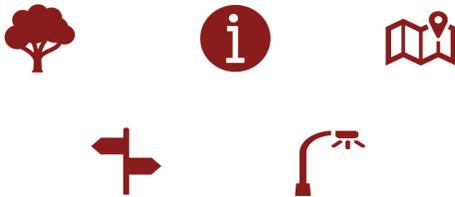


Exhibit 7: Summary of Bus Stop Conditions and Amenities in Sun Valley Study Area

Bus Stop Amenities and Overall Ratings

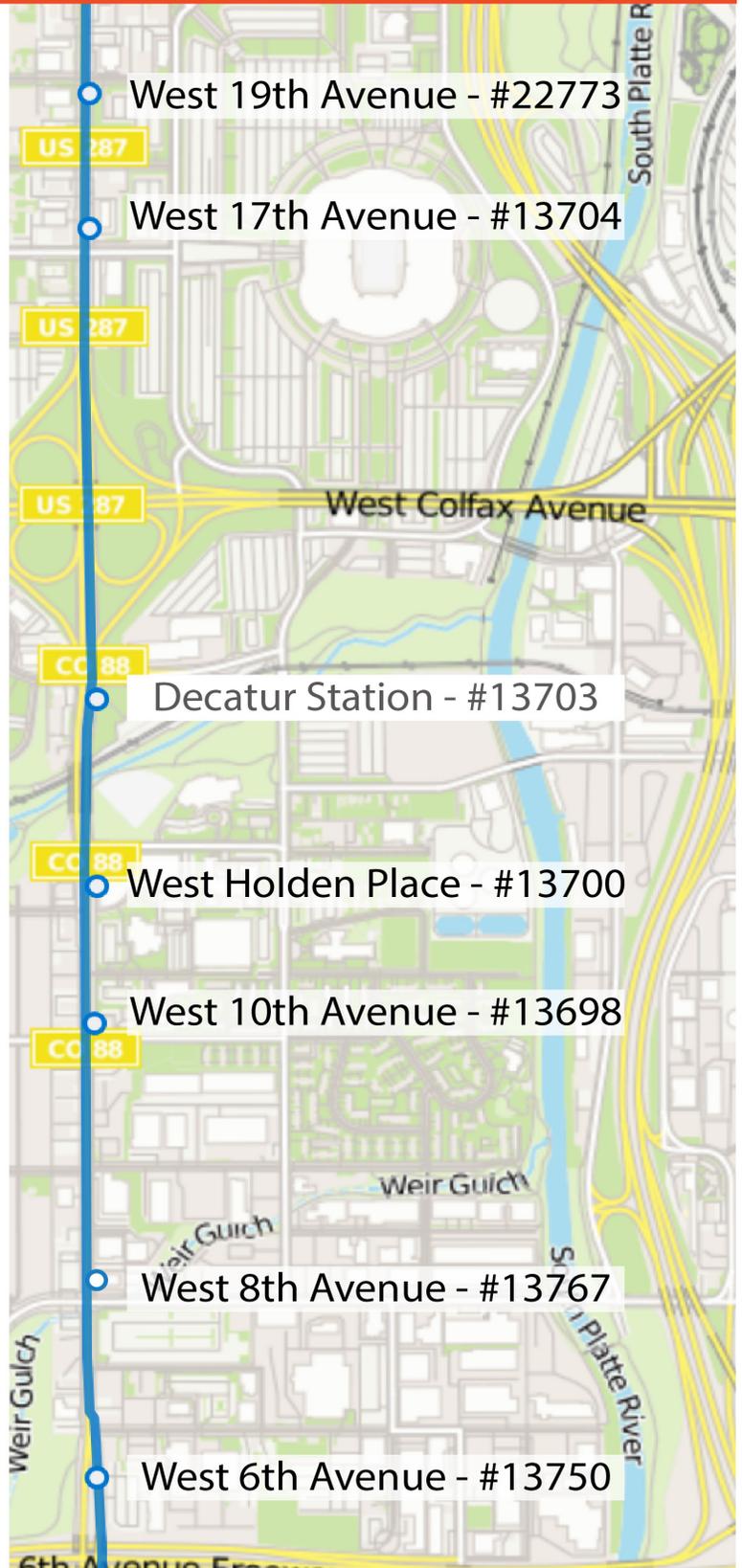


Unrepresented Amenities



2 stars **No Amenities**

2 stars **No Amenities**



INTERCEPT INTERVIEWS

Intercept surveys were used to capture bus riders’ reasons for using transit and their perceptions of bus stop quality and desired amenities. The survey consisted of 17 questions, including a mix of free response and multiple-choice answer options and were printed in both English and Spanish. In total, the project team collected 22 surveys, though there was variation in the degree of survey completion with incompleteness most commonly being attributed to the participant’s bus arriving. While the team aimed to receive responses from a demographically representative sample of the population, 77% of interviewees were male. The high rate of male participation can be attributed to a greater number of men present at the bus stops as well as a higher rate of success approaching men with surveys. Nearly half of respondents (41%) were between the ages of 30 and 39, with a quarter identifying as White and another quarter identifying as Hispanic (28% each). Overall, the intercept

interviews provided insight into the demographics of bus riders, their reason for riding, and their perception of bus stops. The majority of riders surveyed within the Sun Valley study area appeared to be dependent riders of transit, illustrated in Exhibits 9 and 10 below. Over 80% of respondents were riding transit either due to not owning a car or for cost-saving purposes. The likelihood that most survey participants were dependent riders is furthered by the proportion that ride the bus at least once a day, at 68%. The high volume of dependent riders is likely due to the Sun Valley study area containing Denver Health and Human Services, Denver Health’s Westside Clinic, and several other organizations serving a primarily low-income population.

Exhibit 9: Frequency of Transit Use

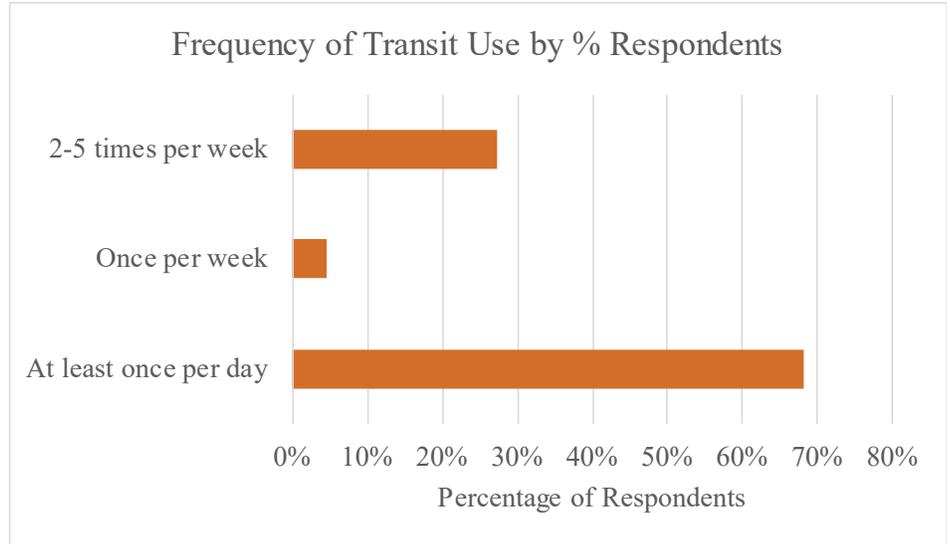
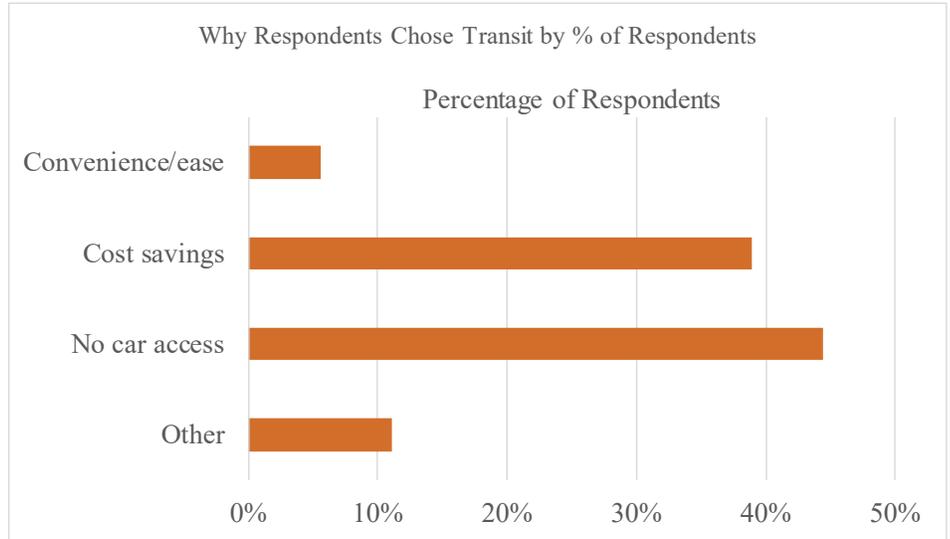


Exhibit 10: Why Respondents Chose Transit



The majority of riders using bus stops in the study area were not residents of Sun Valley; only 22% of people surveyed lived in the neighborhood. Furthermore, 62% of respondents indicated that they transferred from another bus and were just passing through the area. The high proportion of nonresidents using bus stops in the study area gives further credence to the theory that health and social services are one of the primary draws and activity centers within the neighborhood. The popularity of Denver Health and Human Services as a destination for transit riders exacerbates concern about the fenced off bus stop in front of the facility, limiting access to the largest activity center.

Additionally, Decatur-Federal Station acts as a convenient transfer point, bridging light rail and bus service. Sun Valley residents are more likely to use stops within the neighborhood, such as those on Decatur Street, rather than walk to the fringe of their neighborhood to access transit. The riders at stops along Federal Boulevard are primarily accessing work, services, or transferring to another bus or the light rail.

Interviewees were relatively neutral in their assessment of the bus stops. Seventy-eight percent of respondents rated the bus stop between 2-4, suggesting a lack of strong feelings. There was a relatively even distribution of amenity requests as participants could check all amenities that were desired. As a result, they often ended up choosing all amenities. Furthermore, respondents were split on whether they preferred closer stops with fewer amenities and further apart stops with more amenities. Sixty percent of respondents preferred closer stops and less walking, while 40% preferred further stops with more amenities. Overall, respondents were relatively indifferent to the state of the stop but when presented with the option of improved amenities, they were quick to request improvements. Furthermore, most residents (63%) felt safe at the bus stop, although several respondents stated that they witnessed violent crime within view of the bus stop. When riders answered that they felt unsafe, it was often dependent on time of day and due to the actions of other riders rather than the bus stop itself. Overall, surveyed riders seemed generally neutral when assessing the quality of bus stops.

Exhibit 11: Transit Mode Used to Reach Bus Stops

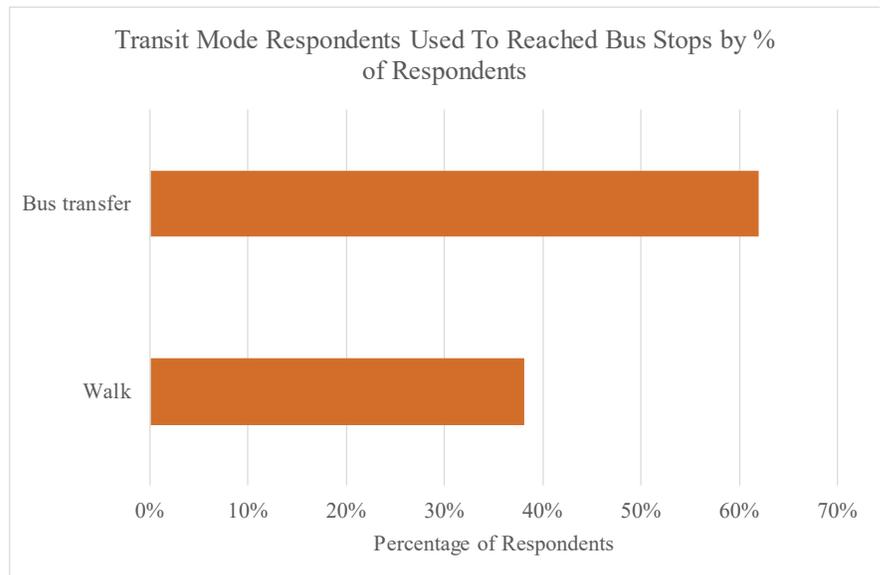
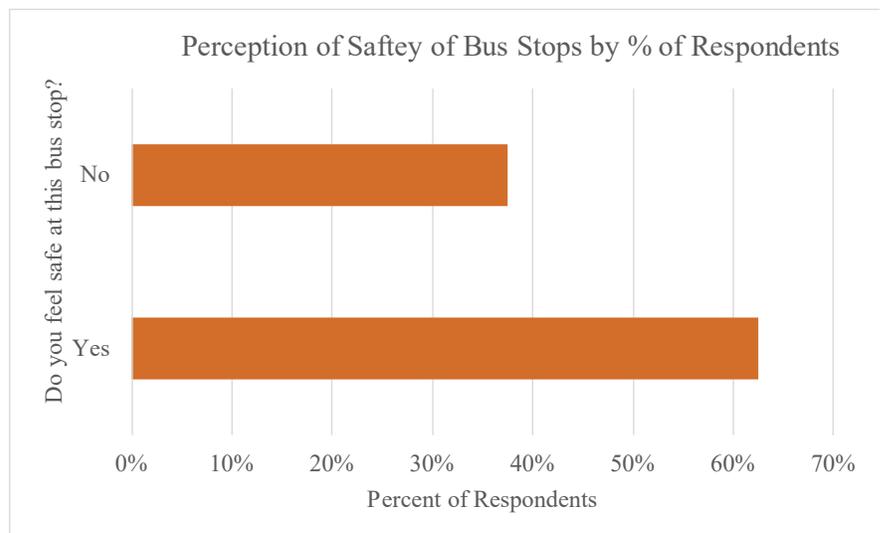


Exhibit 12: Perception of Safety of Bus Stops



METHODOLOGY CRITIQUE

Bus Stop Site Investigation

While the WalkDenver digital survey proved to be an effective tool to collect data about bus stop amenities, the research team was concerned about the interobserver reliability of the tool, both within the Sun Valley team and Federal Boulevard Bus Stop Study as a whole. The effectiveness of the 1-5 rating scales was limited by differing definitions of what constituted bus stop quality. There was a lack of agreement over which combination of quality and amenities, or lack thereof, resulted in which score. While the research team was able to align the rating scale within the group, there was concern that there would be inconsistency among all groups, resulting in unusable data. Ultimately, further explanation and examples of what constituted different quality of stops would benefit future studies.

An in-class training where students rate pictures of bus stops and then compare ratings would increase interrater reliability and improve the consistency of the data collected at bus stops. The research team was also unsure about the duration of bus stop conditions along Federal Boulevard, due to the significant amount of construction. For example, many of the bus stops that lacked amenities appeared to be on newly constructed sidewalks, which would justify why there was only a bus stop sign with no amenities. These stops have the potential to be high quality stops in the future due to the improved surrounding infrastructure. Clarification about the plan for the bus stops in light of the construction would provide research teams with additional context that could improve their scoring.

Intercept Interviews

The research team generally had success with the intercept interviews, with the principal challenge being the limited amount of time available to engage riders before they got on the bus. While the survey may have been designed with some redundancy in mind to gauge the overall quality of the data, the redundancy exacerbated the stress of limited time, often frustrating participants. The redundancy was most notable in Questions One, Three, Five, and Sixteen, which addressed respondents' reasons for riding the bus.

In addition to the redundancy, Question Eight, regarding the spacing and subsequent quality of bus stops, was often difficult to explain in a concise way to riders, often requiring multiple repetitions before receiving an answer. It was the determination of the research team that this question should be simplified or removed from the survey due to the confusion it created in survey participants, potentially resulting in misrepresentative data and wasted time.

The way that participants answered certain questions was also of concern to the research team. For example, Question Six ("How far are you traveling on transit today?") likely resulted in misrepresentative data as riders may not have the same perception of distance riding on transit than if they were driving. There is the potential for bias to be introduced by riders under or overestimating how far transit takes them, making the data unsuitable for reporting as it may minimize or embellish how far riders take transit.

Overall, the research team felt that limited time could be used more efficiently to produce more robust data if the surveys were simplified. Removing the redundancy and clarifying questions would reduce the occurrence of surveys being unfinished due to participants needing to board their bus. Furthermore, simplification of questions could result in better reporting, analysis, and recommendations.

INTRODUCTION

The current construction along Federal Boulevard creates a significant challenge for RTD’s service delivery, but also provides an opportunity to make significant improvements to the bus stops located along this corridor. The construction resulted in some ambiguity during the site investigations as the research team was unable to discern if the current state of the stops was permanent or would be improved following the completion of construction. For example, the three stops located in the southern portion of the study area have new sidewalks, but consist of a small bus sign with no additional amenities. Google Maps indicates that several of these stops had more amenities prior to construction. Furthermore, whether due to construction or some other cause, the research team discovered a bus stop that may not be in RTD’s current records (#13767). This report will identify gaps and make recommendations based on the current state of the stops. Gaps have been organized into existing, missing, and experience categories. Recommendations will be given at both the micro and macro levels, including stop-specific and systematic issues.

GAPS

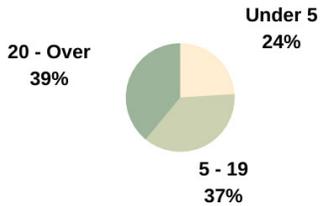
EXISTING	MISSING	EXPERIENCE
 <p>Fenced off stop prevents access to amenities</p>	 <p>Most stops lack basic amenities</p>	 <p>No sense of place or community</p>
 <p>Construction impacts access + navigation</p>	 <p>No lighting</p>	 <p>Unsafe and confusing conditions</p>

OPPORTUNITIES TO IMPROVE SERVICE

Existing Infrastructure

IMPACT

Young Local Population



45% of Local Residents
44% of Riders Interviewed



GAPS

ACCESS



SAFETY



CAPACITY



EXPOSURE



RECOMMENDATIONS

COMPLETE



IMPROVE



ENHANCE



ENCLOSE



GAPS

Existing

While the current construction along Federal Boulevard is a relatively short-term issue in relation to transit service, it still poses problems to daily riders of transit. Obstructed sidewalks limit accessibility and connectivity, particularly for those transit riders and pedestrians who need to cross Federal Boulevard. While this situation may be temporary, it creates confusion for riders who are unsure which of their routes continue to operate and which stops remain in service. There is limited signage which does little to mitigate these challenges.

Currently, the stop at Holden Place is fenced off and obstructed from use by riders, possibly in anticipation of sidewalk reconstruction. However, Denver Health employees stated that the stop had been fenced off for at least three months, significantly preceding construction work. In addition to rendering all amenities unusable, the fencing decreases the safety of the stop and the surrounding area, cutting off an already narrow sidewalk. Transit riders must wait in close proximity to the busy traffic on Federal Boulevard, making it difficult for pedestrians to pass. Additionally, despite the stop being fenced off, its trash cans are overflowing and the entire stop is relatively unkempt. This stop is located in front of Denver Human Services and should presumably see a high volume of transit riders. However, the research team noticed little to no utilization during the site investigations, likely due to these conditions. Visitors to Denver Human Services, who may be disabled or elderly, were forced to use less convenient stops at West 10th Avenue or Decatur Place.

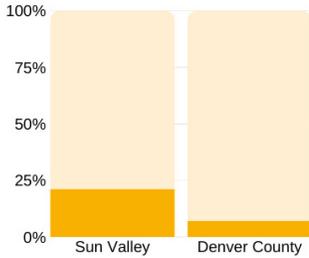
North of the Decatur-Federal Station is an unsafe crosswalk across the exit ramp of Colfax Avenue heading north onto Federal Boulevard. The clover structure of the exit ramp makes it difficult for drivers to see pedestrians crossing due to the curved angle of angle of the ramp. Poor lighting exacerbates the current condition of the crossing, making it even more unsafe for pedestrians at night. While Colfax Avenue is slated to undergo redevelopment, including improvements to its existing infrastructure, pedestrian crossings across the Colfax entry and exit ramps pose an immediate threat to public safety and Denver's goal of achieving Vision Zero.

OPPORTUNITIES TO IMPROVE SERVICE

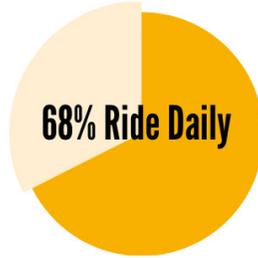
Missing Infrastructure

IMPACT

Transit Mode Share 3x Denver's



Frequency of Ridership



Missing

Many of the stops, particularly in the southern portion of the Sun Valley neighborhood, lack amenities beyond just a sign. The absence of amenities detracts from the stops' sense of place and purpose and creates confusion for riders; the research team was asked by an infrequent rider if the bus would pick up at one of the stops with just a sign. The absence of a minimum standard of amenities detracts from the brand and service of RTD, making the service uninviting for potential riders. Additionally, none of the stops included any kind of wayfinding for riders, making it difficult to plan trips without prior experience with the system. This is particularly important as the majority (62%) riders interviewed indicated they were making a bus transfer. Currently, the signs include only the name and number of the routes served, but do not include a map or indicate destinations along the route or connecting routes.

STANDARDIZE AMENITIES FOR RELIABILITY

SHELTER



WAY FINDING



WASTE DISPOSAL



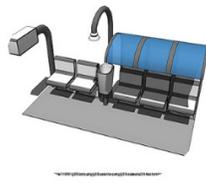
LIGHTING



TREES



SEATING



SCHEDULES



ART



In some cases, the absence of any shelter or seating contributed to unsafe conditions. This is particularly true at the Federal Boulevard and West 10th Avenue stop, where riders are confronted by traffic on all sides of the stop: along Federal Boulevard, West 10th Avenue, in the 7-Eleven parking lot behind them, and at the entrance to the 7-Eleven lot. Cars continuously move around the stop, with the only protection being a small curb-sized barrier between the stop and the parking lot behind it. This stop seemed particularly dangerous for riders travelling with children; this is concerning, considering the high proportion of children living in the adjacent Sun Valley neighborhood.

In its current state, the street lights on Federal Boulevard do not provide enough visibility and are rarely adjacent to bus stops. None of the stops assessed in the Sun Valley service area provide their own lighting, resulting in riders waiting in dimly lit or dark conditions at night. The poor visibility at many of the stops is further exacerbated during the winter, when the sun sets before rush hour at 5:00pm. Many interviewed riders shared negative perceptions of safety at the bus stops, with many commenting that they were more uncomfortable riding the bus at night. The poor visibility likely exacerbates many of the riders' negative perceptions of safety. Furthermore, the poor visibility is a hazard to pedestrians, especially on a busy thoroughfare like Federal Boulevard. Overall, the poor lighting serves as a significant safety hazard and obstacle to many current and potential RTD riders.

OPPORTUNITIES TO IMPROVE SERVICE

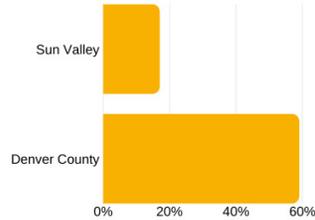
Rider Experience

IMPACT

Sun Valley Isolated by Highways



Low Rates of Full-Employment



Experience

Current construction, minimal amenities, lack of signage, and dangerous pedestrian conditions contribute to an overall unwelcoming experience for riders along the Federal Corridor. The bus stops are not designed to meet the needs of its riders, many of whom are elderly, disabled, traveling with children, or speak other languages. There are no navigation services available for riders; this could pose a particular challenge for the many low income riders who may not have access to smartphone navigation options. While it is inevitable that construction will contribute to temporary shifts in service, there are no signs explaining anticipated changes in service or expected delays. Some conditions, such as the blocked stop at West Holden Place, have lasted longer than should be expected even when factoring in construction. These conditions contribute to an overall sense of unreliability.

GAPS

FREQUENCY



RECOMMENDATIONS

BUS RAPID TRANSIT



SECURITY



ACTIVATION



In addition, there is little connecting the Federal Boulevard corridor with the Sun Valley community. None of the riders interviewed by the research team lived in the Sun Valley neighborhood, despite it being just one block away. Poor pedestrian infrastructure leading into the neighborhood and ongoing construction make it difficult for many residents to use the Federal Boulevard bus stops. Therefore, Federal Boulevard, and the transit service along it, continue to feel like barriers to the Sun Valley neighborhood rather than assets. The absence of public art or acknowledgement of the Sun Valley neighborhood detracts from the area's character, sense of place, and community ownership. The redevelopment of both Federal Boulevard and Sun Valley provide an opportunity to better integrate the current transit service into the fabric of the neighborhood.

UNINSPIRING



AMBIANCE



RECOMMENDATIONS

Micro

Measures should be taken to improve the safety of riders at the West 10th Avenue stop. Shelter and seating would significantly reduce the risk of individuals falling over the short wall into the 7-Eleven parking lot. If shelter or seating is not possible, warnings via paint or signage should be installed to reduce the risk of injury to riders. Another method to reduce the issues of the 10th Avenue stop is to remove it altogether and serve the location through a different stop placement with a safer surrounding area. The redistribution of stops will be covered in the Macro Recommendations section.

VULNERABILITY



PROTECTION



Presumably, the sidewalk at the West Holden Place stop will be reconstructed to be more pedestrian friendly, similar to other stops to the south. In the meantime, it is worth investigating why the stop is fenced off, despite construction not having started. The stop is large with a significant amount of amenities that could be used to improve rider comfort and experience until construction begins. After the reconstruction of the sidewalk at West Holden Place, the stop should be reevaluated to be consistent with the recommendations made for other stops in this report.

A short-term solution to the unsafe crosswalks along the Colfax Avenue entry and exit ramps is to install flashing lights at pedestrian crossings to alert drivers to the presence of pedestrians. The installation of warning lights will be particularly effective at night when crossing is the most dangerous. For future improvements pending the redevelopment of Colfax, WalkDenver should continue to work in partnership with the Over the Colfax Clover & Viaduct project to advocate for a more pedestrian friendly design.

Currently, the rail and bus services offered at Decatur-Federal Station feel disconnected and like a missed opportunity to showcase the best of RTD's service. The bus stop at Decatur-Federal Station was the most utilized stop in the along the Sun Valley section of Federal Boulevard by a significant margin. As the research team was collecting surveys, many riders were shuffling between the rail and bus services, but the state of bus stop amenities did not align with brand new station below. Decatur-Federal Station offers the opportunity to showcase the best of RTD's service by integrating the rail station with the bus stop. Potential improvements include improved lighting, shelter covering the stairs from the bus stop to the station, and bathrooms - an amenity commonly requested by several riders. Additionally, Decatur-Federal Station would be an ideal location to provide live updates on both bus and light rail routes. Ultimately, Decatur-Federal Station provides an opportunity for RTD to increase its brand and showcase the best of its service. The construction along Federal Boulevard and redevelopment of the Sun Valley Neighborhood and Stadium District offer the ideal conditions to create a new identity for RTD through an improved Decatur-Federal Station.

Macro

Temporary signage should be installed to inform riders how construction along Federal Boulevard will affect existing services so that they can account for any timing or route changes to their usual service.

Based on requests from the rider survey and personal observations during site investigations, the research team recommends the establishment of a set of minimum or standard amenities for every bus stop in the RTD system. Establishing a minimum standard of stop amenities will increase the perceived quality of RTD's service, improving rider experience. The study recommends that the following amenities be provided at all stops:

- Seating
- Lighting
- Trash can
- Signage and wayfinding that incorporates universal design with multiple languages

The creation of minimum standards for stops will likely increase the cost to RTD, especially given the frequency of stops along this corridor. In the Sun Valley study area, there are seven stops within 1.3 miles, meaning there is a stop less than every fifth of a mile. There is an opportunity for RTD to consolidate the number of stops along the Sun Valley portion of Federal, leaving more funds to invest in a standard set of amenities and improving the on-time performance of routes by reducing the frequency of stops. The study team recommends reducing the number of stops from seven to five total stops, placed at the following locations on Federal Boulevard northbound:

- **West 7th Avenue** - Consolidate West 6th and West 8th Avenue stops
- **West 10th Avenue** - move from current location to the southern side of West 10th Ave to reduce hazards of 7-Eleven parking lot
- **West 12th Avenue** - More centrally located in order to better serve Denver Human Services and the Denver Health Westside Clinic
- **West Decatur Place** - Maintain connection to rail services
- **West 17th Avenue** - Maintain easy access to Empower Field

Repositioned stops include:

- **West 10th Avenue** (in front of 7-Eleven) - Current location is dangerous and lacks amenities
- **West Holden Place** - Current location does not efficiently provide access to the services riders are accessing

Removed stops include:

- **West 6th Avenue** - Placement close to 6th Avenue Freeway creates a barrier to the south, meaning potential riders will not be coming from the south, making the stop inefficient
- **West 19th Avenue** - Sits between West 17th and West 20th Avenue stops, which are less than a half mile apart, making the West 19th Avenue stop redundant and inefficient

The new stop placements would emphasize a commitment to the aforementioned minimum standard of amenities and serve as many high activity areas as possible. For example, the stop closest to Denver Health is currently in front of the street-facing side of the building, surrounded by poor infrastructure. Moving it a half-block south would place it closer to the entrance that riders use and provide easier access to the Westside Dental Clinic.

As Federal Boulevard undergoes construction and is situated as a prominent transportation corridor in Denver, the research team sees an exciting opportunity to create a branded corridor that incorporates the rich cultural heritage of the adjacent neighborhoods. Incorporating public art, such as photography, sculpture, or murals from local artists, would create a strong sense of place and lead to increased feelings of community and safety. Providing signage in the languages most commonly used in adjacent neighborhoods (likely including Vietnamese, Spanish, and Arabic) would improve the riding experience of limited English speakers and highlight the diversity of the corridor. The neighborhoods along Federal Boulevard are some of the most vulnerable in the city for gentrification; a branded Federal Boulevard would contribute to a sense of place for all riders while highlighting and preserving the historic character of these neighborhoods. The incorporation of these placemaking strategies would show that dependent riders are not being taken for granted and are considered valued customers of the transit system.

CONCLUSION

Sun Valley is a rapidly changing neighborhood with exciting potential on the horizon. The planned redevelopment of Sun Valley which includes the construction of dense mixed-income and public housing, the creation of retail and economic activity centers in the stadium district, and improvement of Federal Boulevard, create the ideal conditions for transit to grow and change with the neighborhood. Just as Sun Valley is ushering in a new era that builds on its history and culture, so should RTD and its partners. The Sun Valley neighborhood offers the perfect opportunity to rebrand and reclaim RTD's service with its high proportion of dependent riders, future residential density, and planned growth as an economic destination and activity center.

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